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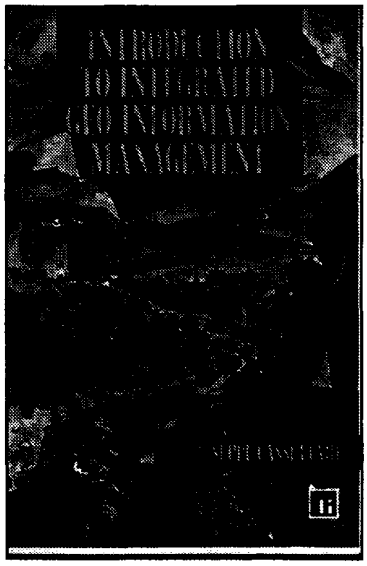
Book Review

Introduction To Integrated Geo-Information Management

Seppe Cassettari

Reviewed by Alias Abdul Rahman and Assoc. Prof. Ghazali Desa



This is a book of how to manage spatial data information, products, and geoinformation resources for decision-making process. It is covered with twelve chapters. All the chapters are superbly written. The book challenges the spatial information managers to explore especially on the subject of cost-benefit for better decision making processes. Chapter 1 (Information Management) discusses general issues of geoinformation systems and geoinformation management. In chapter 2 (Data for Geoinformation Systems), data and information are clarified by using a simple analogy (e.g. unprocessed remote sensing images are considered data and the classified images are the information as portrayed graphically by cartographer on a map). Some typical data sources were discussed, e.g. existing paper maps, spatially derived data, postcodes or zip codes data, and other spatial datasets. From some datasets, different levels information can be analysed and presented. The author keep reminding readers that from some datasets, a valuable information could be achieved if the data were analysed correctly, otherwise less valuable than the original datasets. Attribute data is also discussed in this chapter. Chapter 3 Geo-information Databases) begins with the question of choosing the right data structures and data models. These two terms were defined clearly because the system (i.e. software) performance depends on them. Vector and raster data structures were illustrated. Problem of 3D data in GIS is discussed briefly. Presently, most systems are based on 2D or 2.5D (e.g. any linear data with height value as an attribute data). Temporal data model is mentioned superficially and we think that, it reflects the hardly available time-based systems or software. Object Oriented databases are discussed in the DBMS section. According to the author, present SQL is not able to fulfill what is needed in the real GIS query language, he continues saying that further development has to be done to improve the retrieval and query performances. In chapter 4 (Integrated Approaches to GIS), the development of integrated GIS in the context of large organizations and multi-functional systems is the main concern. Benefits of integrating spatial information among users within or across organisations are also highlighted. Issues of having large integrated GIS systems were discussed. Related subjects of integrated data models, information networks, integration with existing databases, open systems environment, integration frameworks, corporate solutions, organisational issues, implementation strategies, and benefits and costs were fully explained. The reverse of the chapter 4 discusses the subjects on Low Cost Spatial Information Systems. This chapter considers low cost systems to achieve effective spatial information management. The development of microcomputer technology and other related new technologies, e.g. pen-based computers and low resolution GPS were briefly mentioned. Single user machine i.e. stand alone system may be hooked to network for possible multi-user system. Issues of human resources (i.e. staffing), and implementations are discussed. The chapter ends with the discussion on low cost GIS users, examples from some parts of the world are cited. Chapter 6 (Copyright and Legal Issues) concerns the legal aspects of the spatial information. Data owners, laws related to information, access to information, and data ownership and copyright are among the topics discussed. Added value information, liability and GIS, accuracy, inappropriate map usage, and availability of spatial data plus government policy are also described. Author did compare

the availability of data in U.K. and in United States. He noted that GIS businesses in U.S. is far better than in U.K. simply due to the fact that users may acquire data/information relatively easy and cheaper. Chapter 8 (Standards for Spatial Information) discusses the specific standards that exist within the GIS community and the future role of the standards. Organizations involve in creating the standards in some parts of the world is mentioned, e.g. US National Institute of Standard and Technology and British Standard Institute (BSI). An extensive list of data transfer standards (international, national, and industry i.e. de facto and de jure standards) is given. Two standards are described in a little detailed than others, namely, U.K. National Transfer Standards (NTF), and the U.S. Spatial Data Transfer Standard (SDTS). The importance of standards is also discussed, this ends the chapter. Chapter 8 (Analysis Functions in GIS) reviews GIS analysis functions not as detail as in other devoted texts on the subject. The discussion is based on the development of analytical functions within information systems and consider their role in the decision-making process. The chapter reviews the subject with eight subtopics, namely, analysis in GIS, manipulation versus analysis, query and manipulation in integrated solutions, statistical analysis, modelling of spatial data, models for managing derived data, metadatabases and data dictionaries, and developing operating procedures for analytical processes. The first two sections of Chapter 9 (Graphical User Interfaces) highlights the subject of human-computer interface, and user-friendly GIS, such softwares (i.e. 'viewing GIS') are ArcView from ESRI, Spans Map from Tydac, and MGE Project Viewer from Integraph Corporation. Some types of generic interface and GIS-independent user interface is also reviewed. Chapter 10 (Visualisation) discusses the issues relating to cartographic design and the wider field of visualisation in the context of GIS. This is the continuation of the previous chapter because human-computer interface can be considered as part of the visualisation. Some notes on cartographic visualisation subjects, e.g. perception and patterns are reviewed. Other related subjects are map design issues, colour and symbolisation, typology and text placement, interactive map specifications, scientific visualisation, terrain representation, 3D visualisation, perspective cartography, and virtual reality. In chapter 11 (Image-based Spatial Information) considers the data acquired from aerial photographs, satellite images, and scanned data as major contribution to the spatial information mapping. Author briefly reviewed some basic photogrammetry and remote sensing subjects, e.g. vertical aerial photography, photogrammetric data collection, recent technical advances, photo interpretation, orthophotos, digital photogrammetry, image analysis, and integrated image-based systems. Finally, the last chapter, chapter 12 (Multimedia and Hypermaps) concerns types of multimedia, and how they can be used in GIS. Subjects such as multimedia data, digital video, sound, animation, hypertext concept, hyperdocuments, hypermaps, cartographic representation in multimedia, and integrated geo-based multimedia solutions are discussed and reviewed. Appendix A lists acronyms, and Appendix B lists a number of main GIS and related softwares. This is an excellent book which we thoroughly enjoyed reading. It is clear and concise, a sound investment for geoinformation academicians, GIS managers, students, researchers, and commercial practitioners alike. Readers will also find the extensive and up-to-date further reading sections at the end of each chapter.

Book details

Introduction To Integrated Geo-Information Management, by Seppe Cassettari. Chapman & Hall, 1993, 252pp, £17.99 (paper back)

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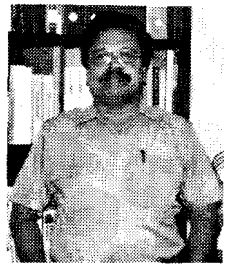

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